



Bangalore

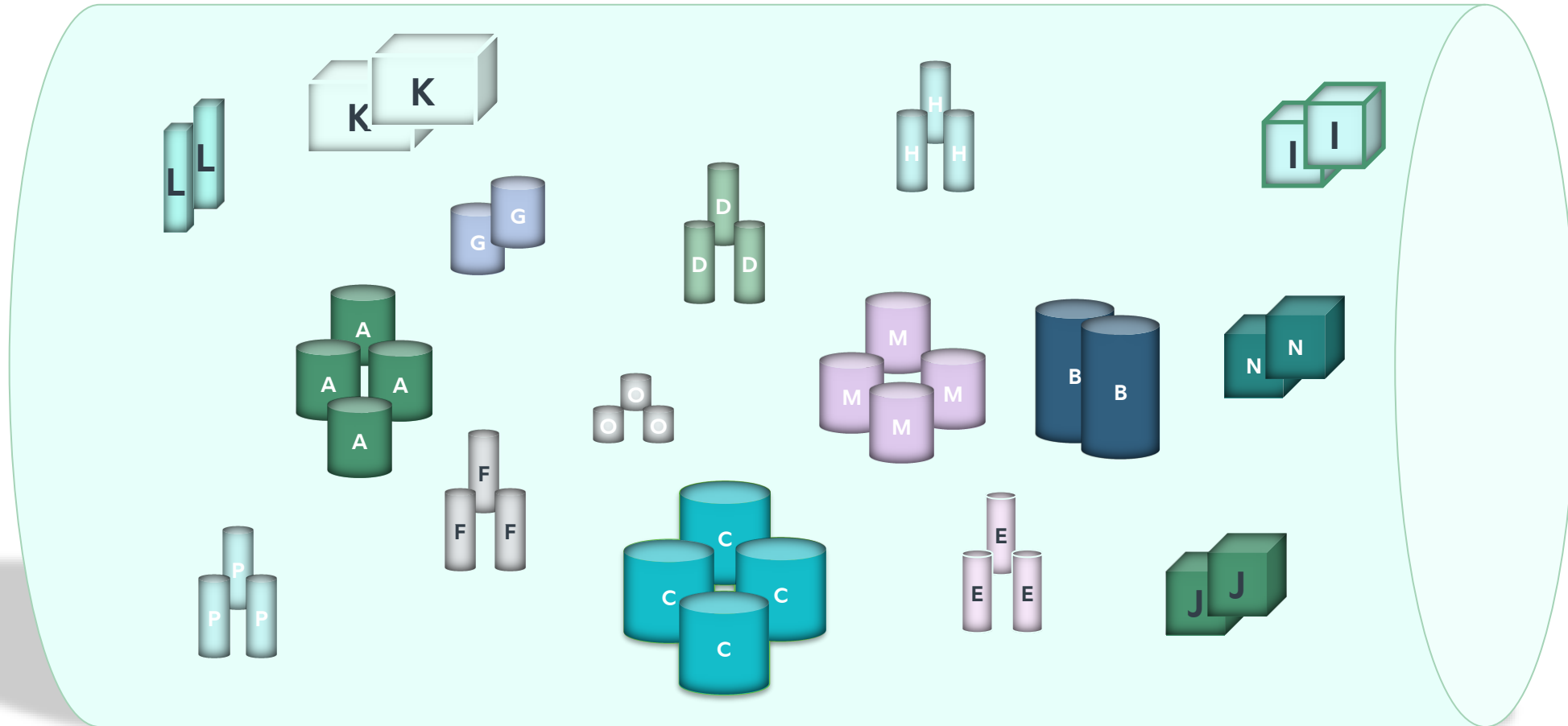
Multi-Cloud Data Sharing

Make the Data Move for you Across CSPs using Cluster Linking

S Vinod Kumar & Nagashree B
Fidelity Investments



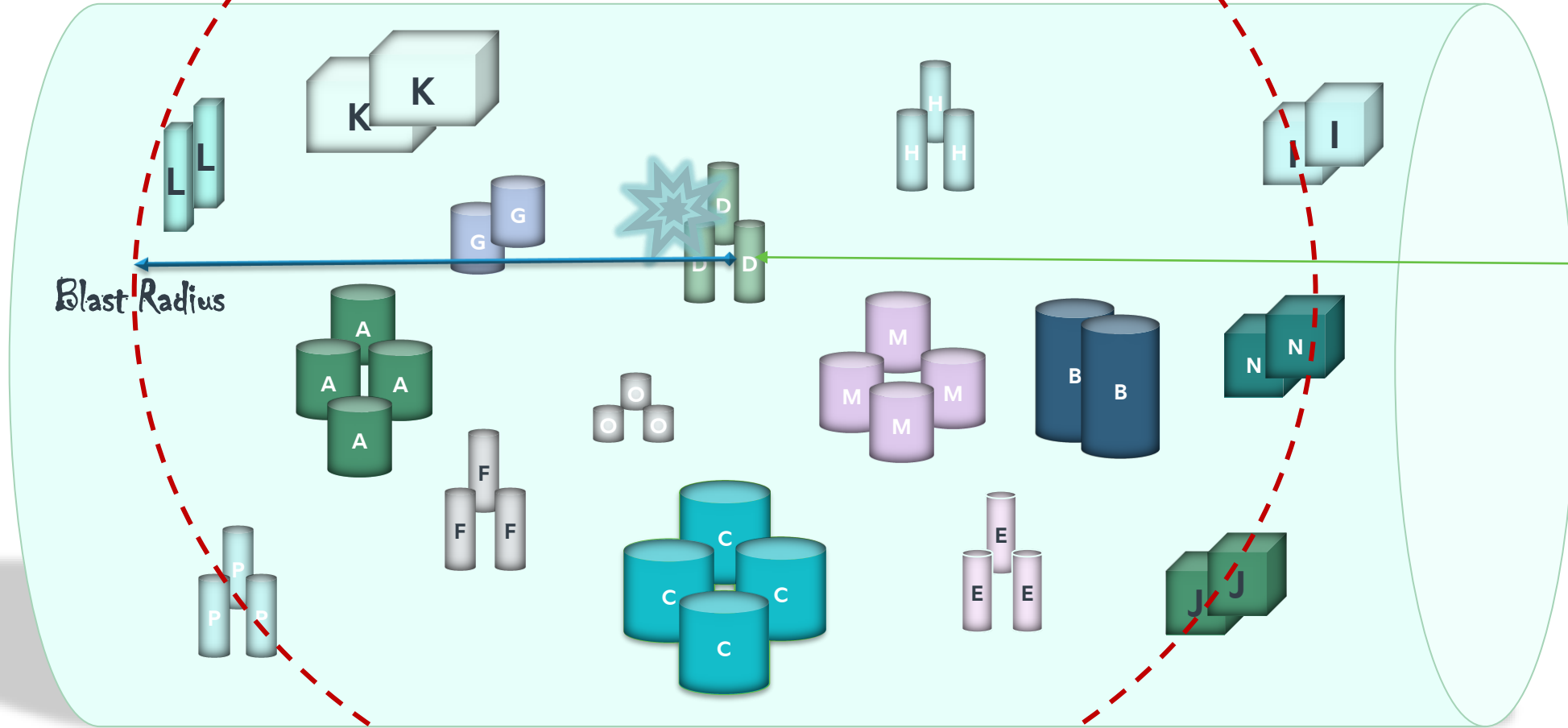
Kafka Cluster Topology



Organization wide shared Kafka cluster



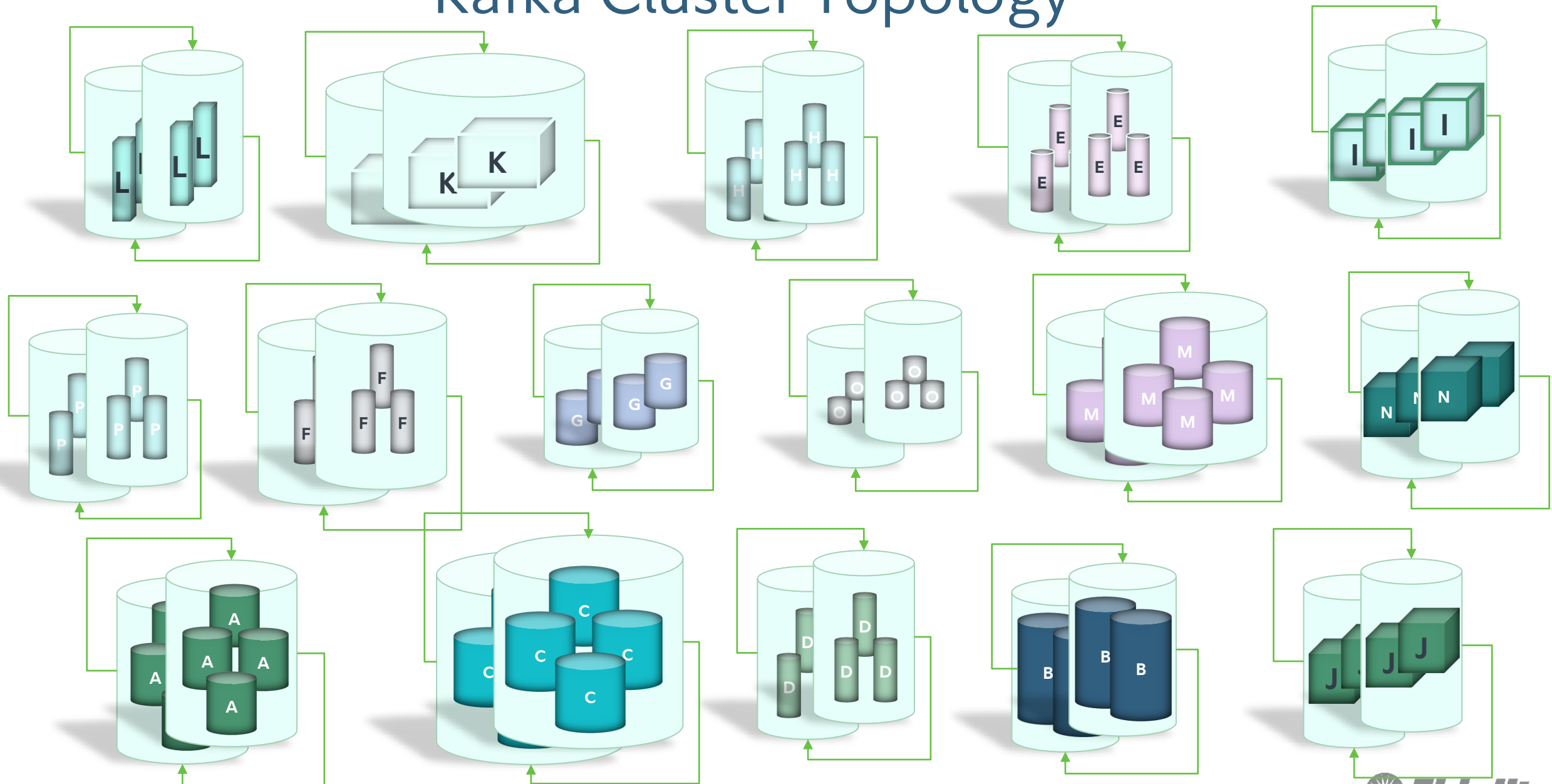
Kafka Cluster Topology



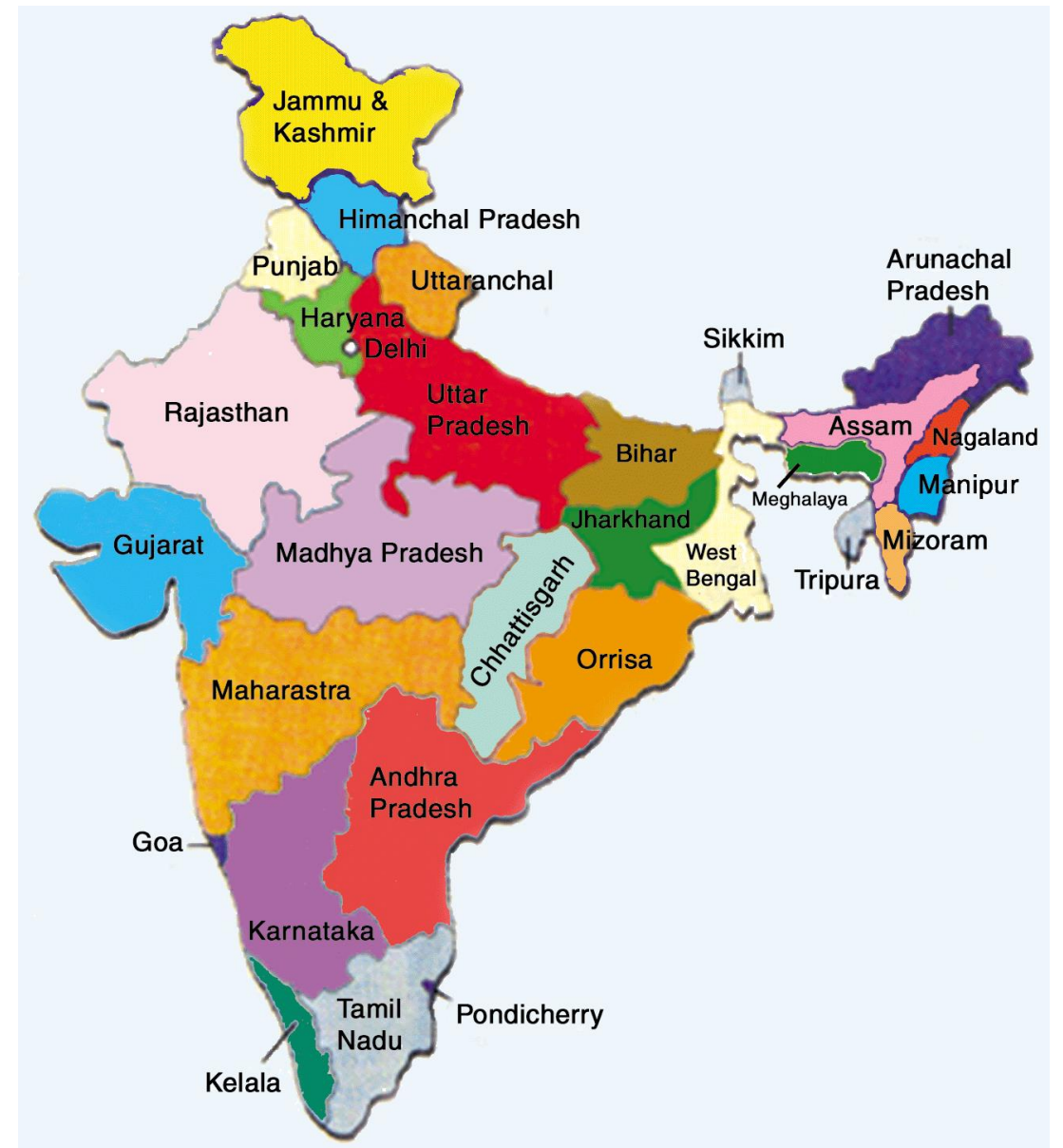
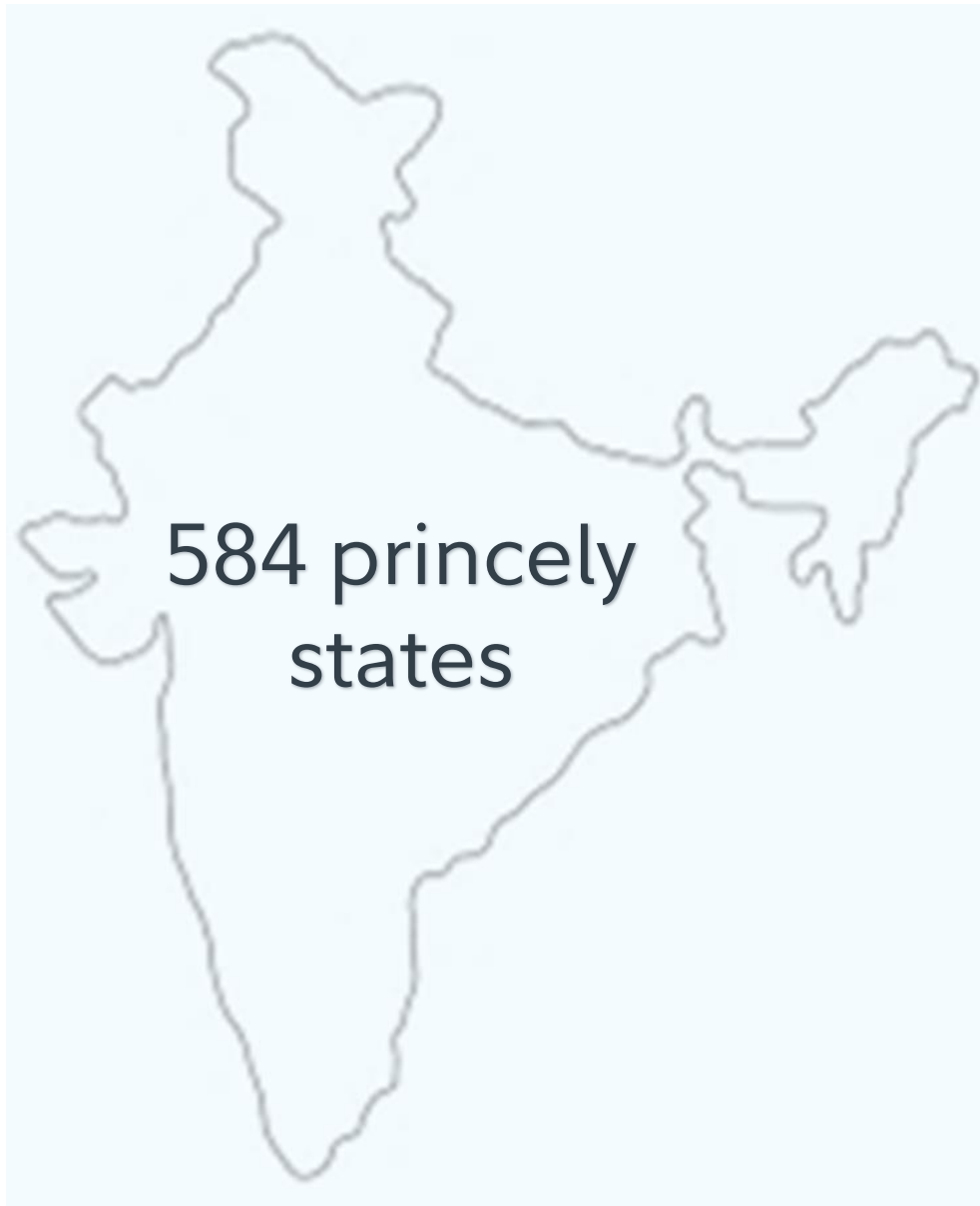
Noisy Neighbors

Organization wide shared Kafka cluster

Kafka Cluster Topology

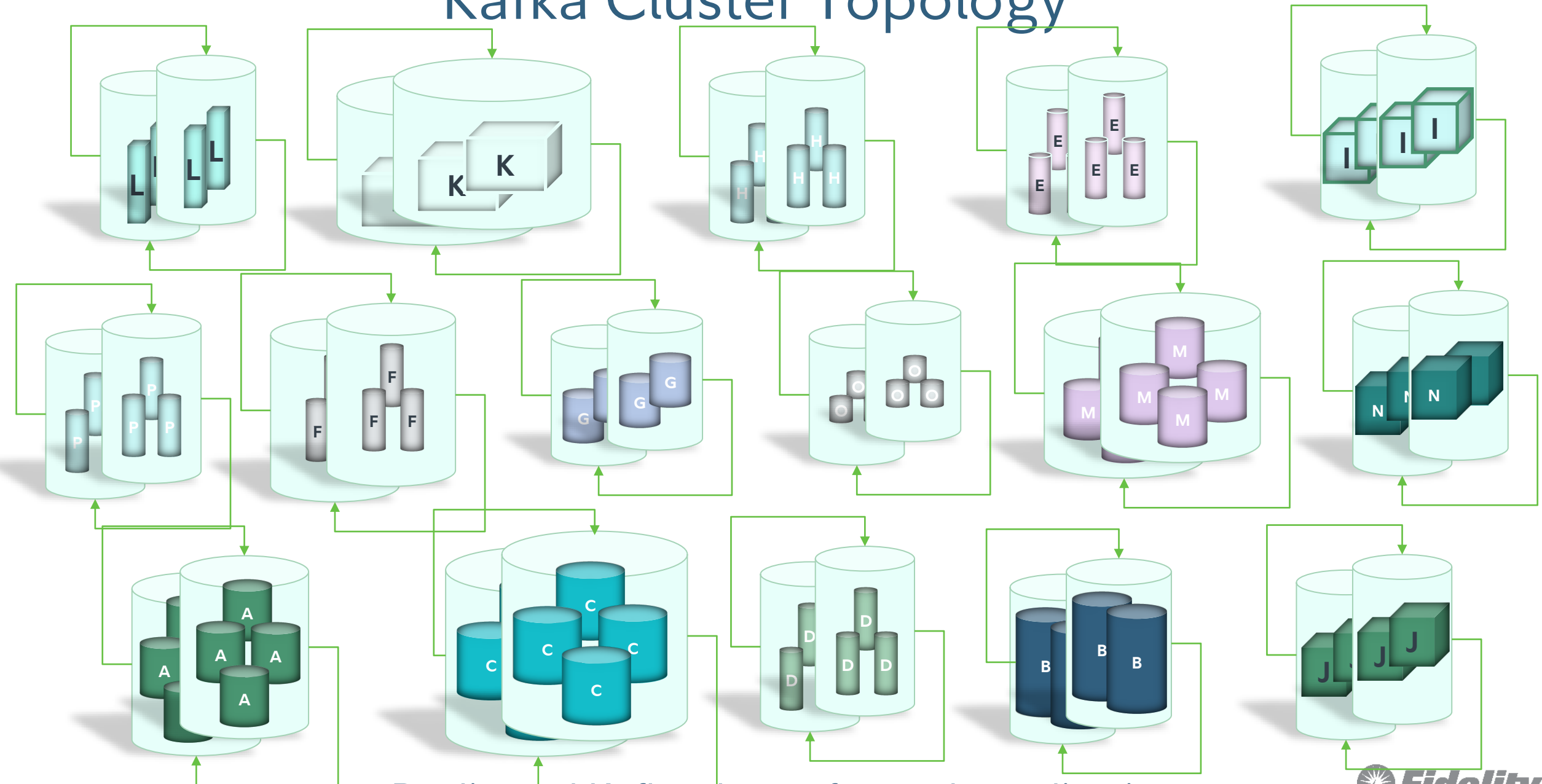


Dedicated Kafka cluster for each application



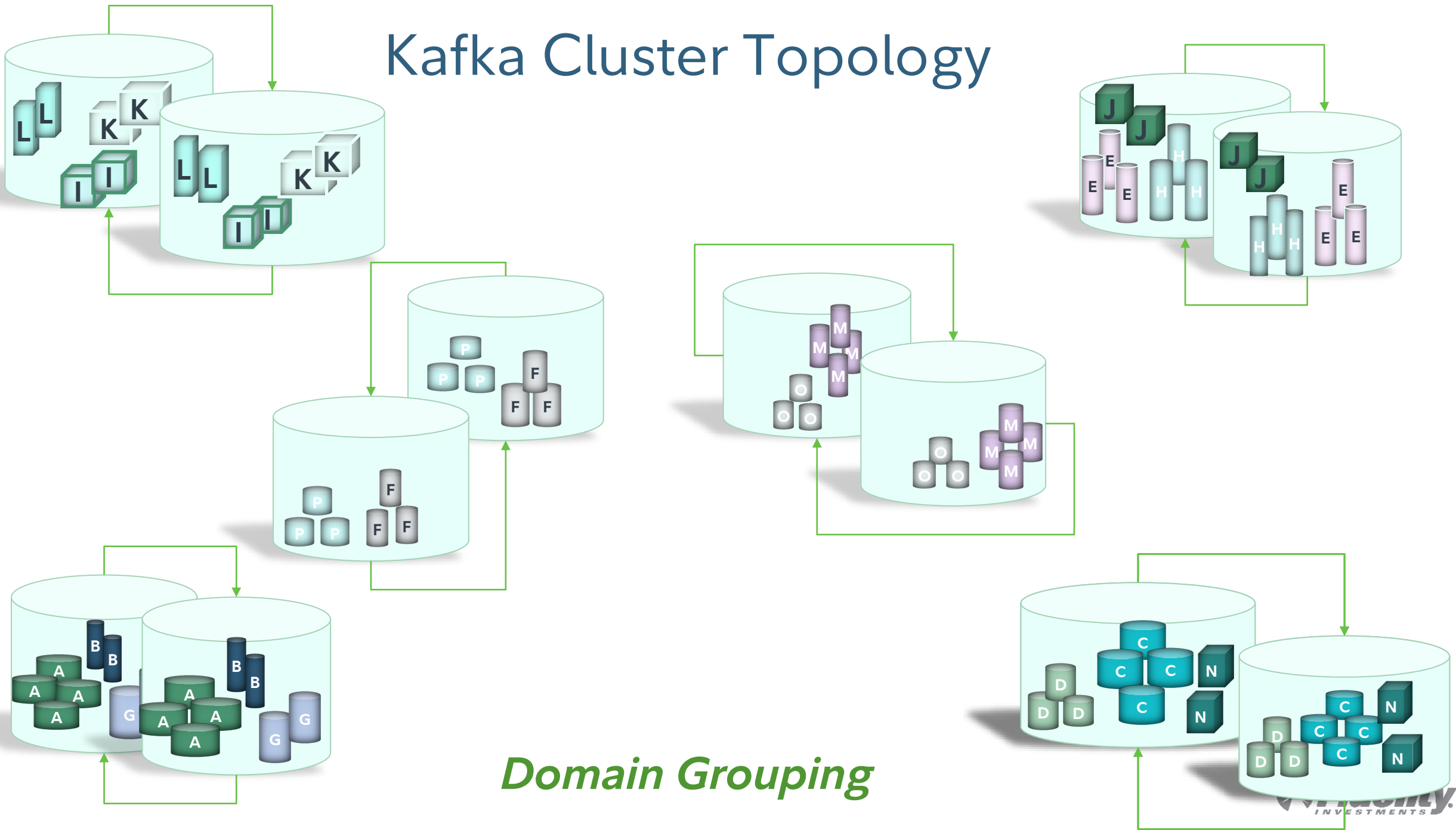
Images Sources: <https://www.rgbstock.com/> and <https://www.toptourguide.com/>

Kafka Cluster Topology

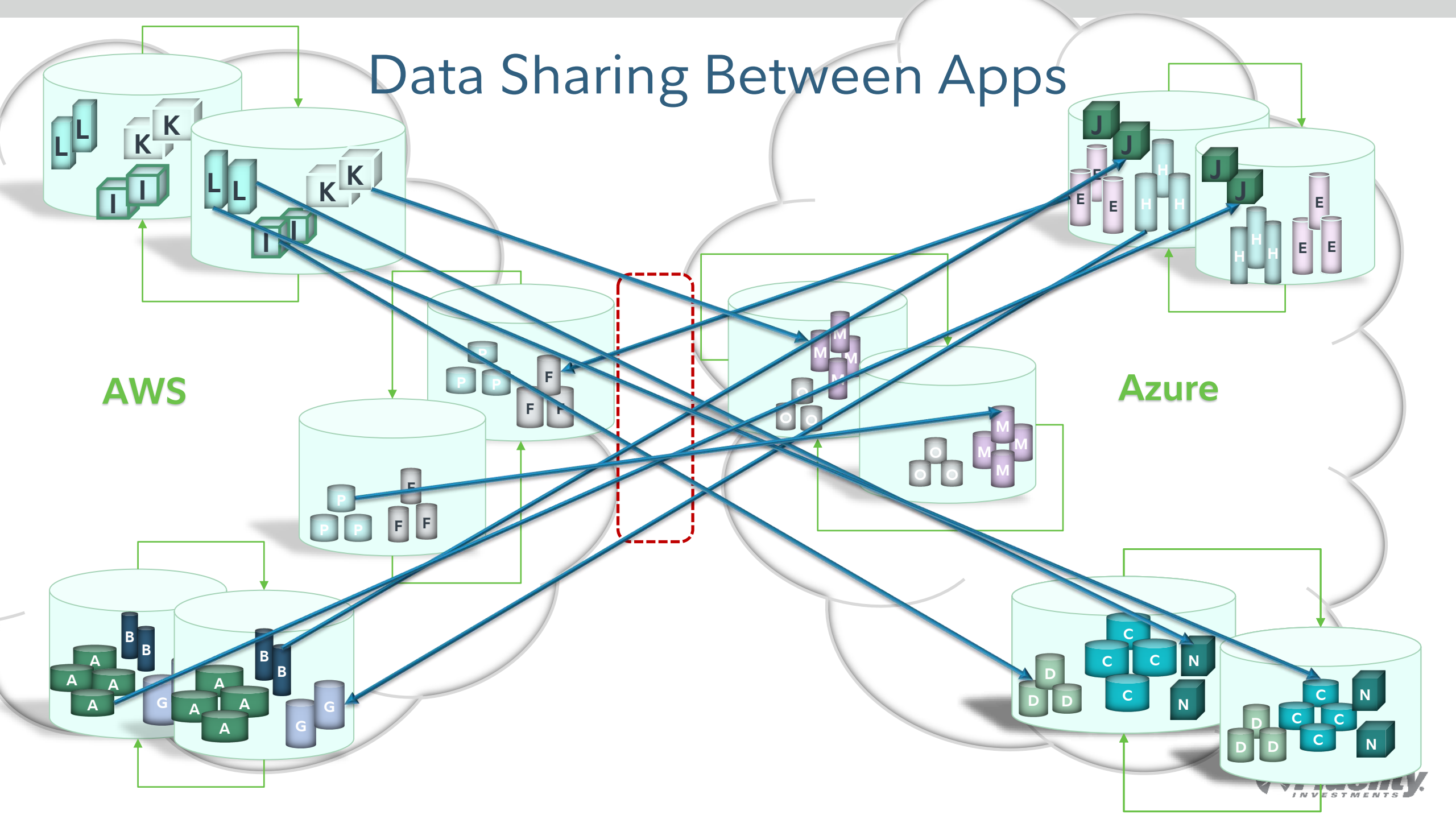


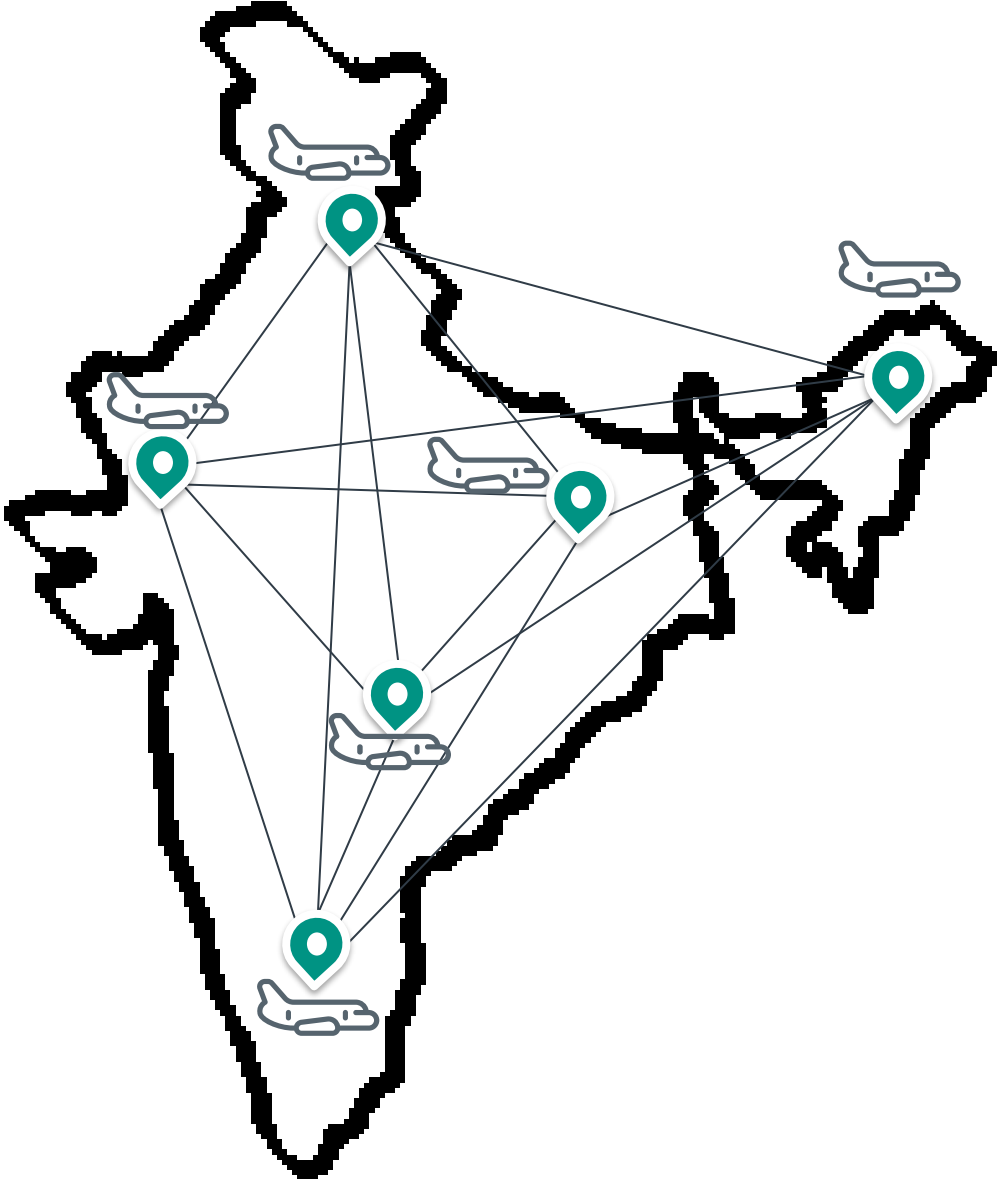
Dedicated Kafka cluster for each application

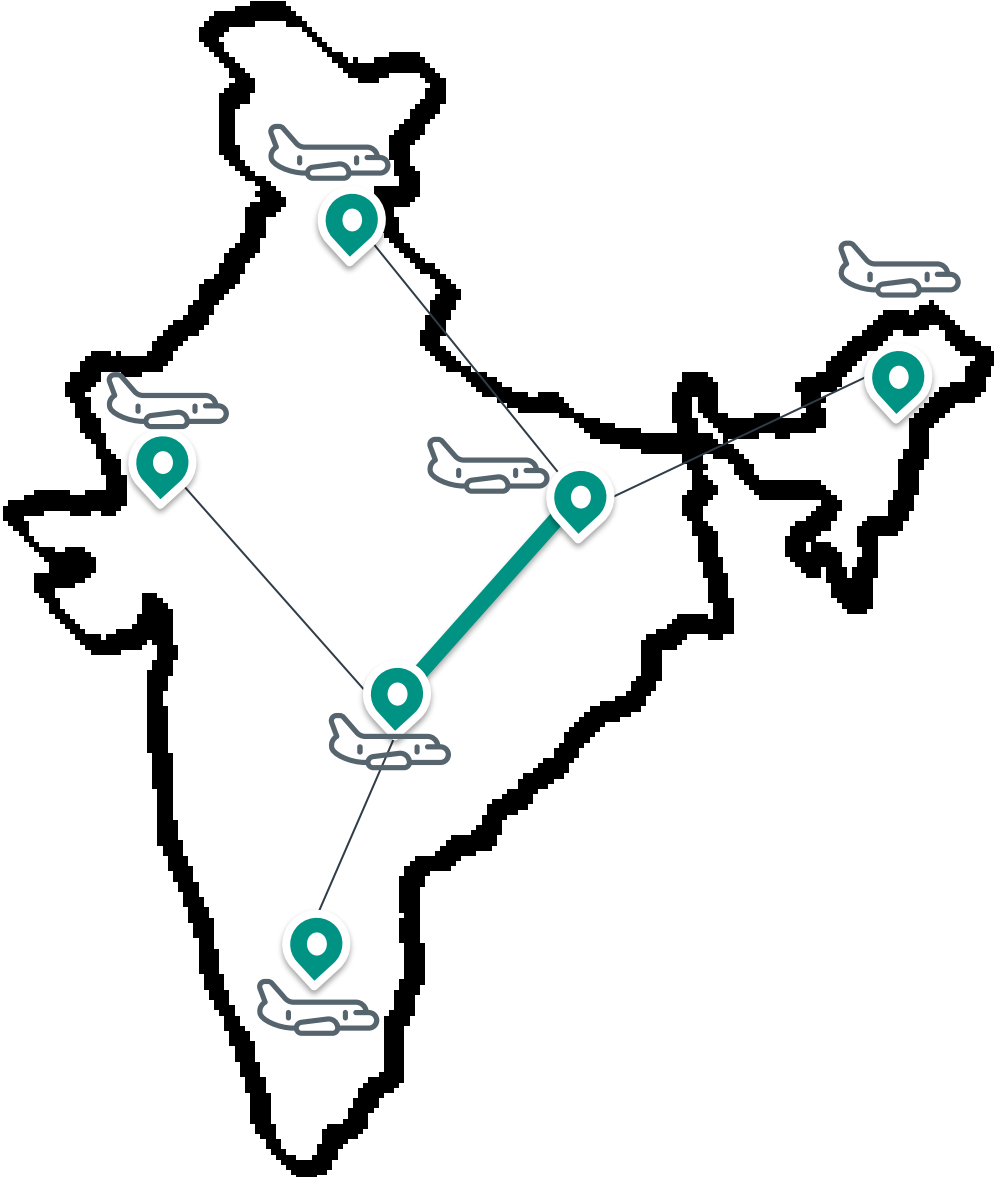
Kafka Cluster Topology



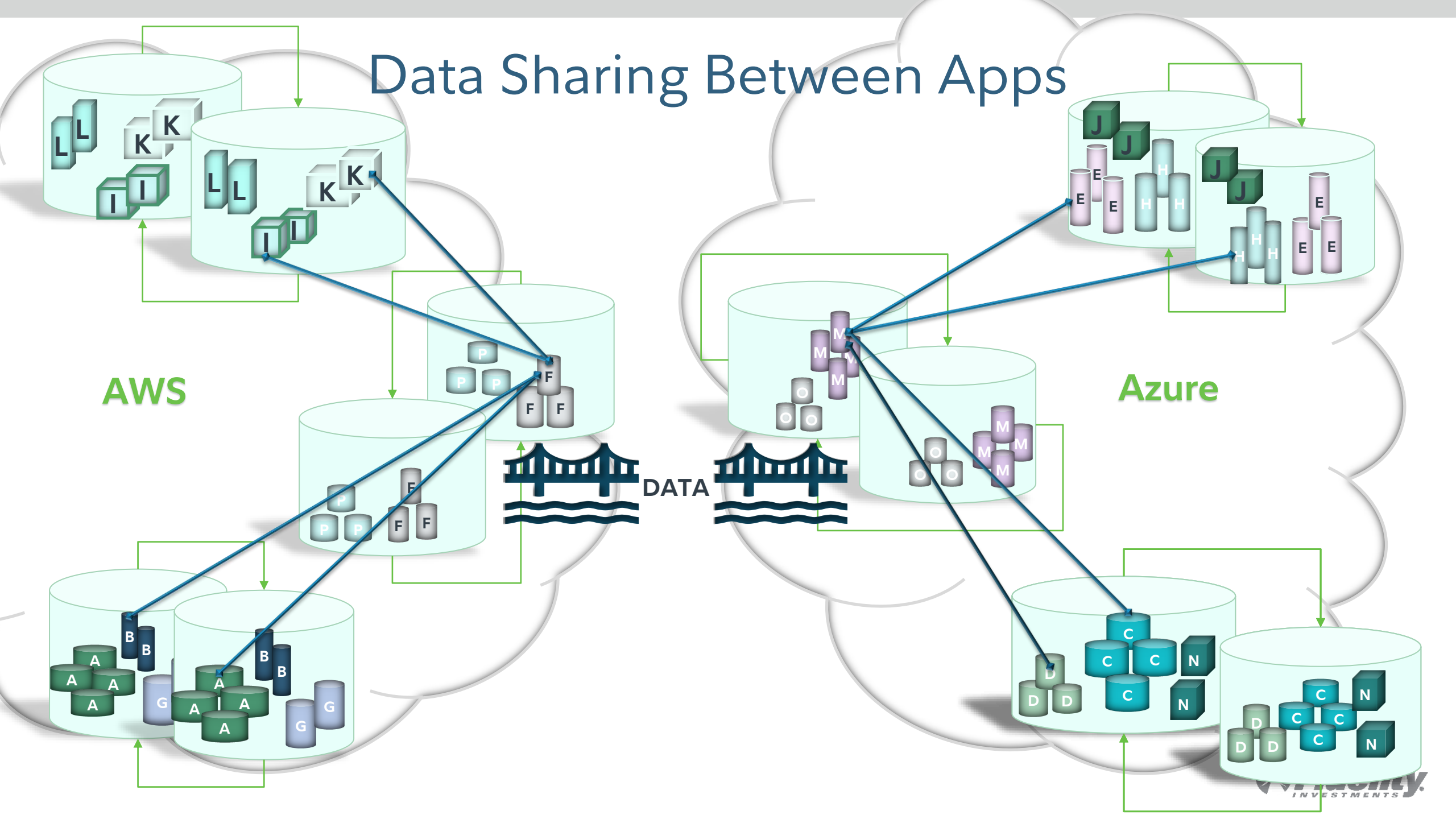
Data Sharing Between Apps







Data Sharing Between Apps

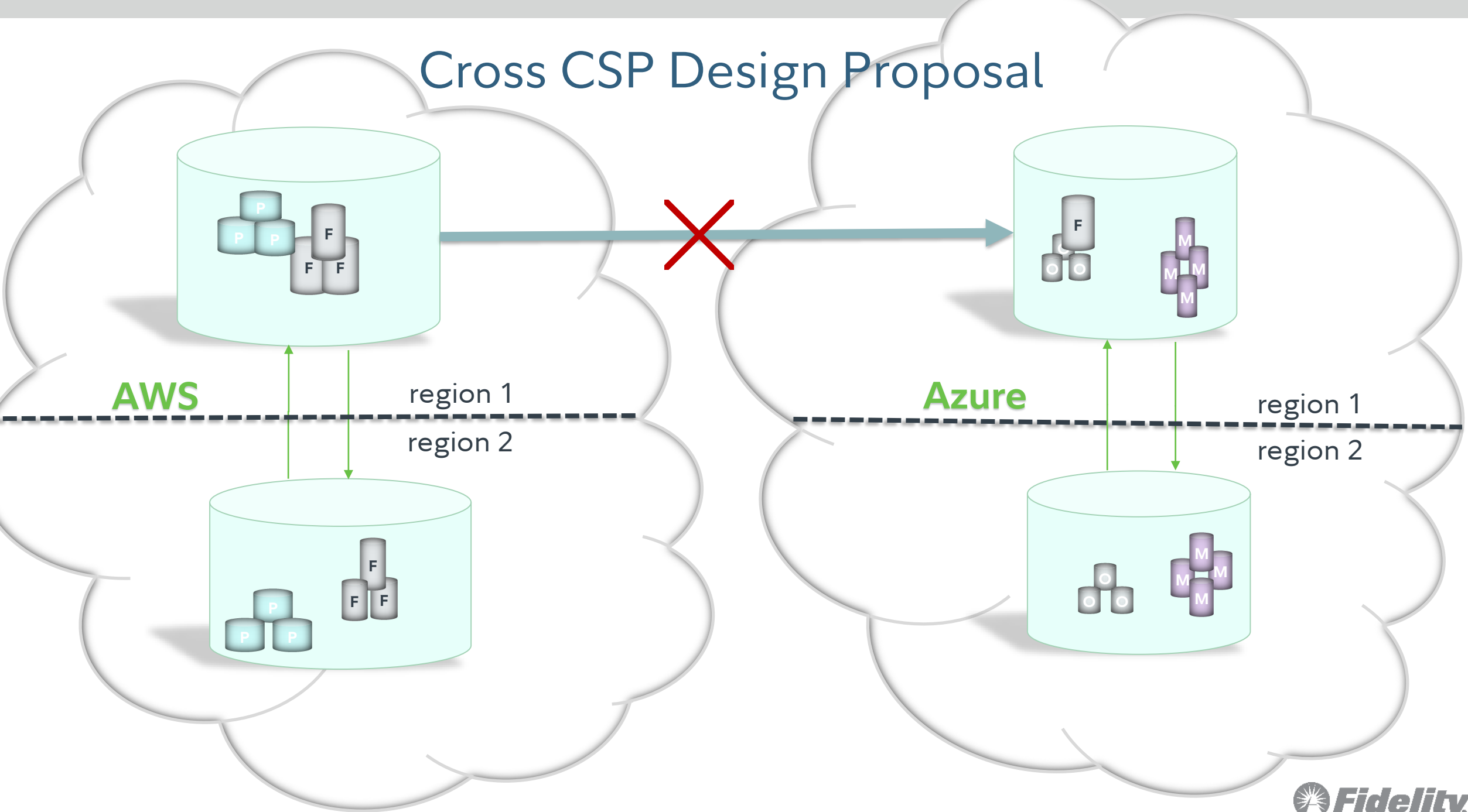


AWS

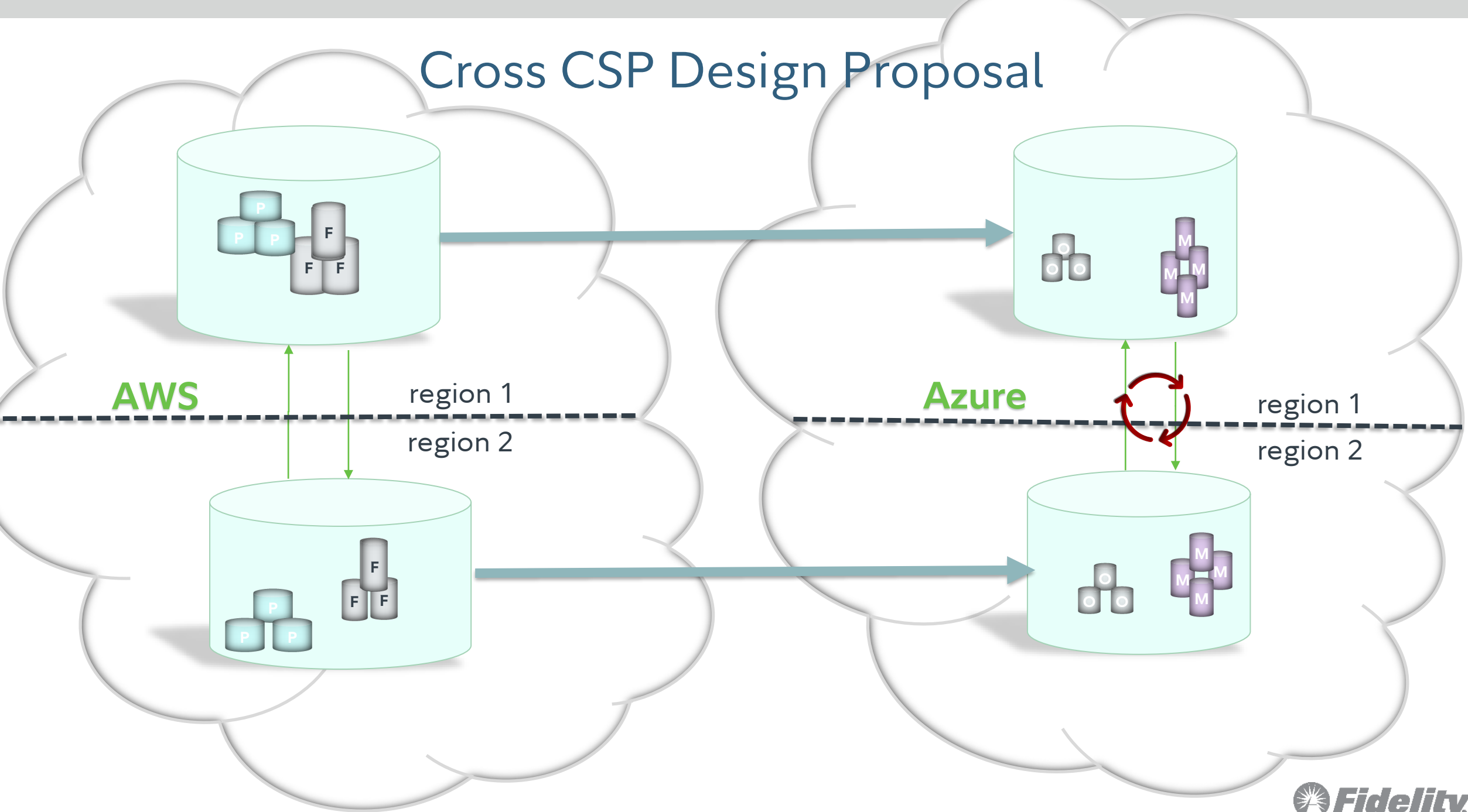
Azure

DATA

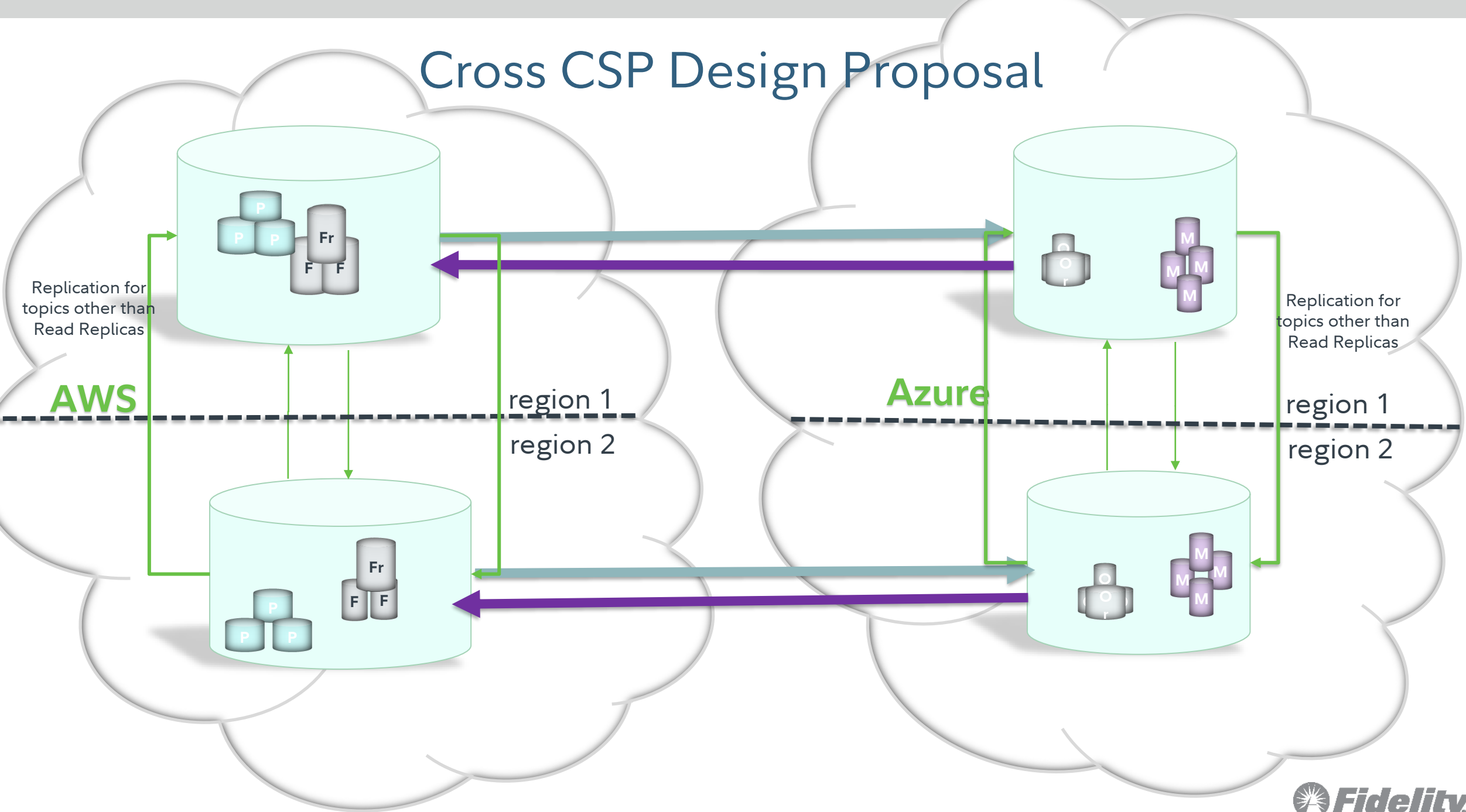
Cross CSP Design Proposal



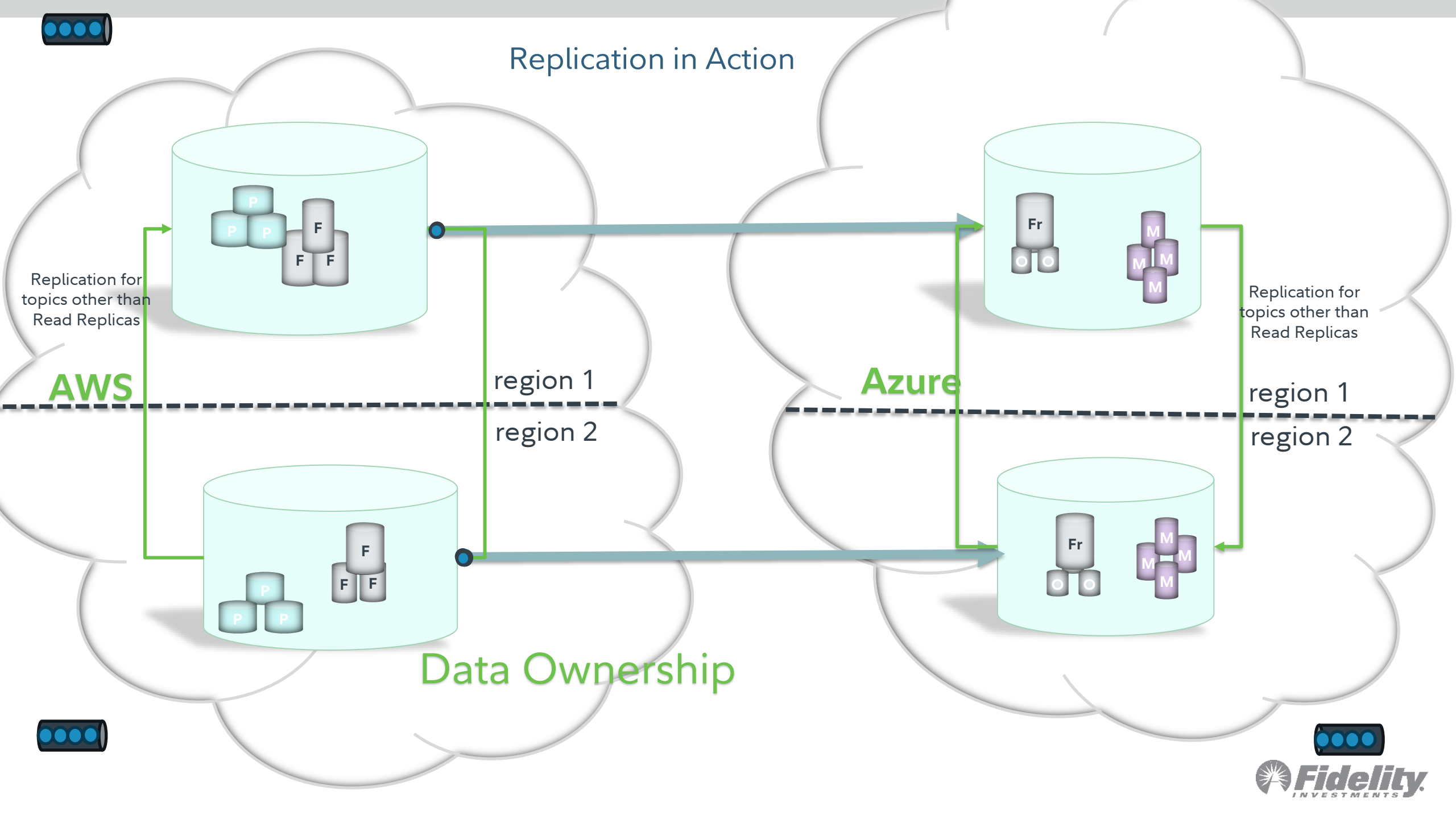
Cross CSP Design Proposal



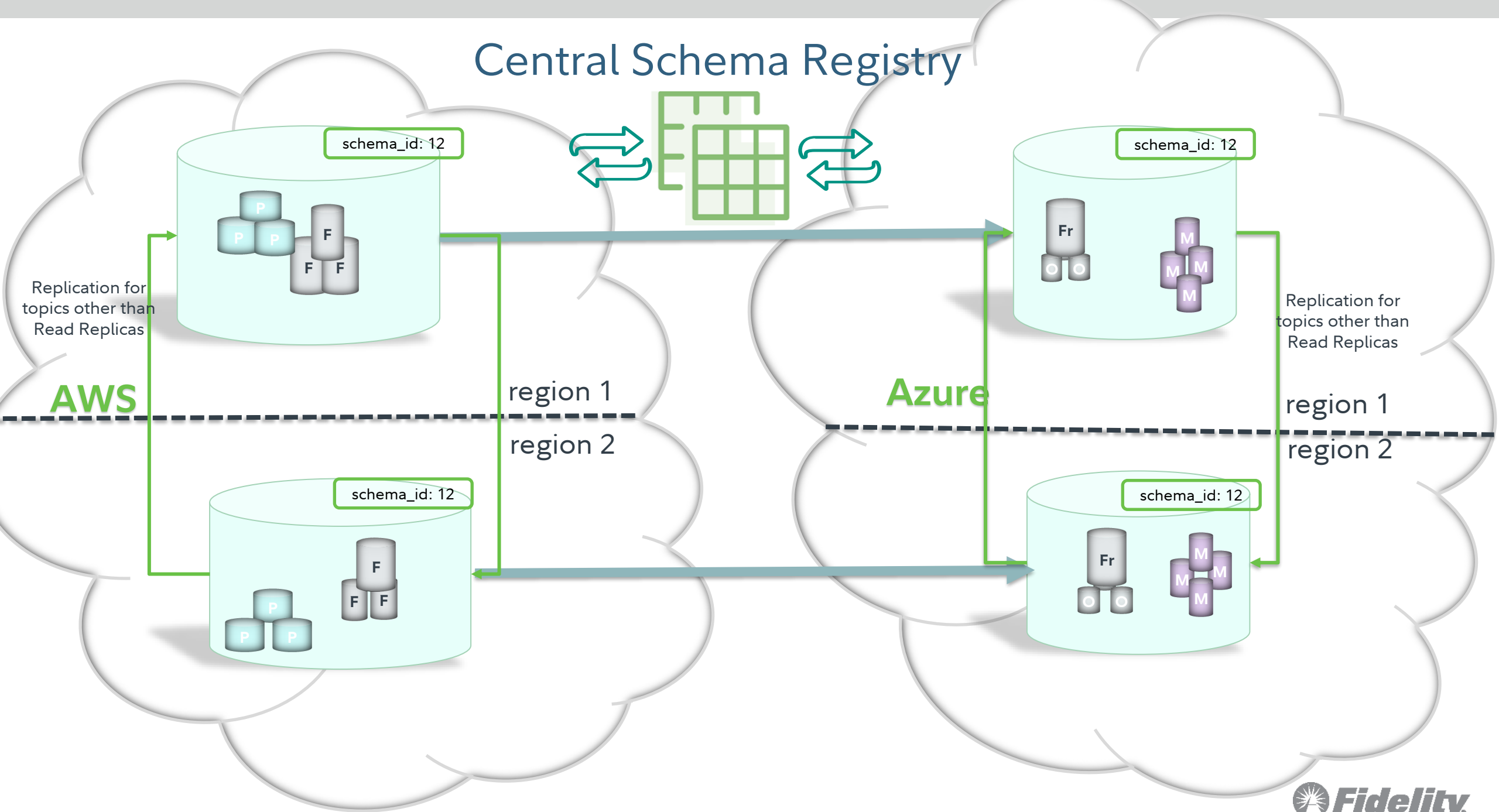
Cross CSP Design Proposal



Replication in Action

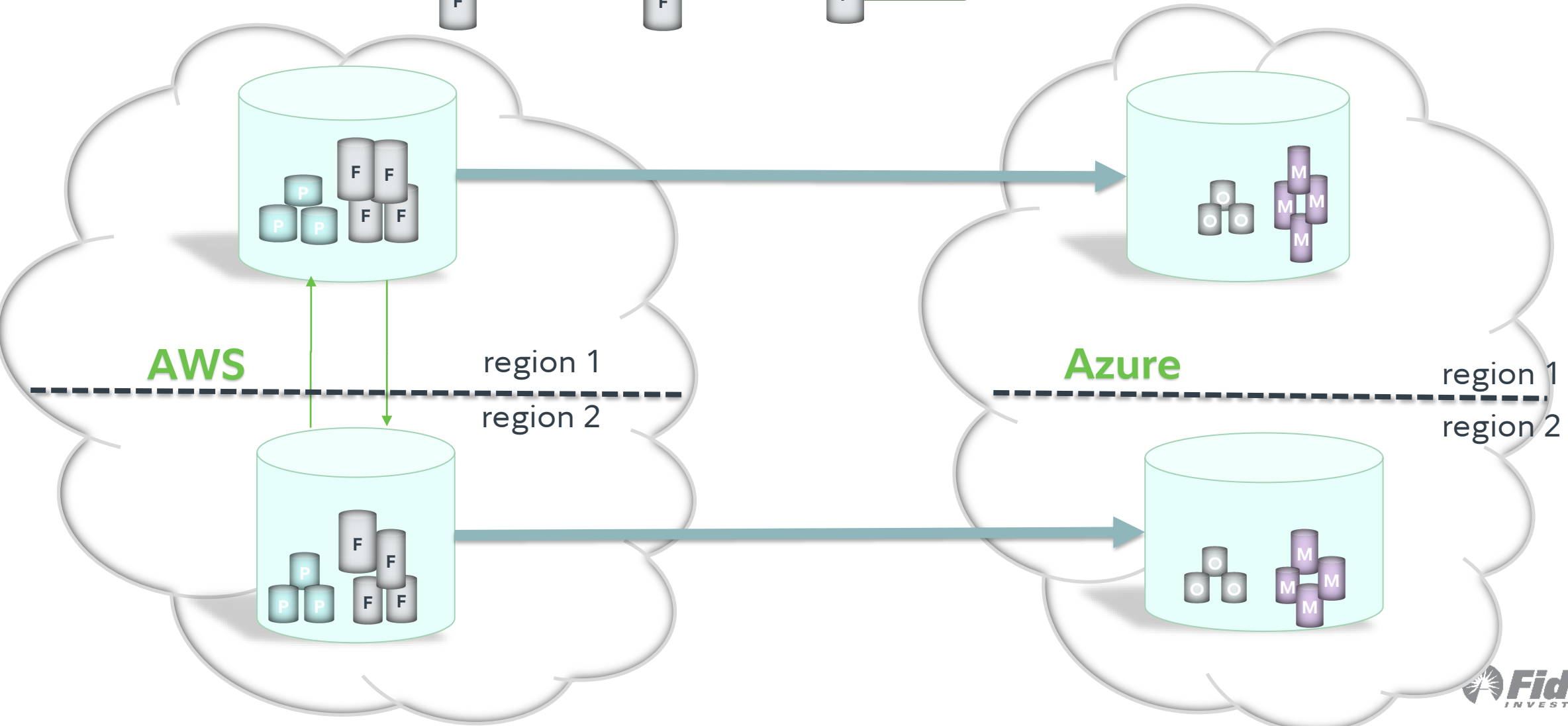
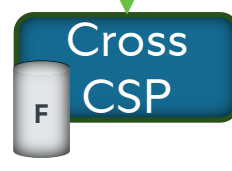
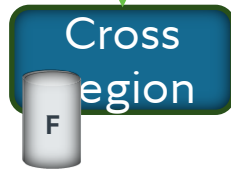


Central Schema Registry



Streaming platform control plane

Topic Creation API



Topic Management

- Create Topic
- Modify Topic Configurations
- Scale Topic
- Delete Topic

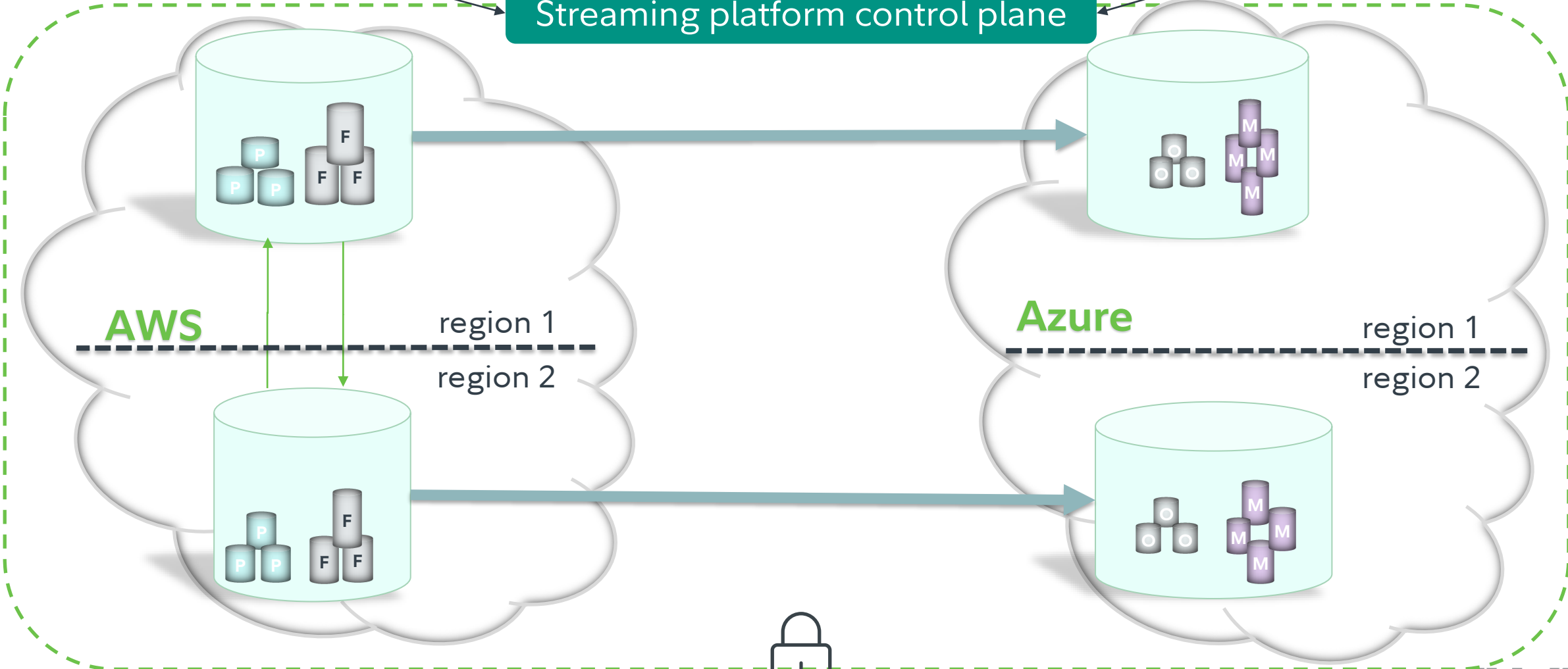
Access Data Plane

- Add Producer
- Add Consumer
- Remove Producer
- Remove Consumer

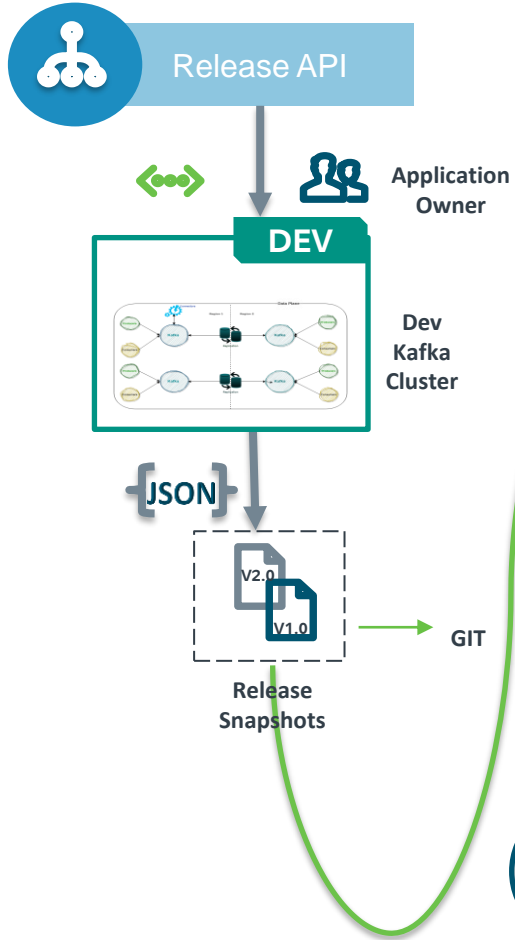
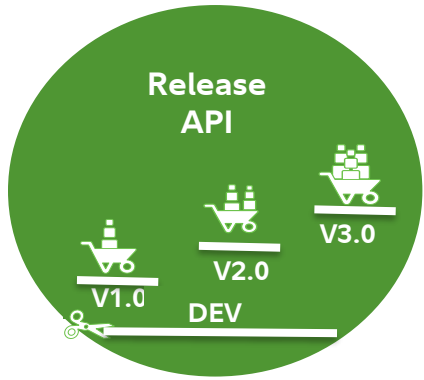
Schema Management

- Register Subject
- Add Schemas
- Remove Schemas
- Change Compatibility

Streaming platform control plane

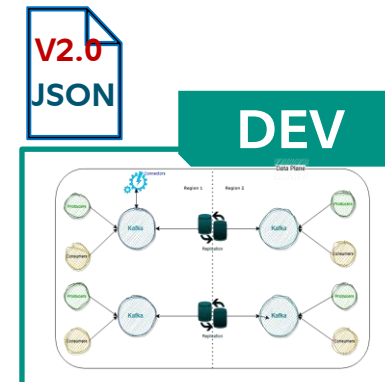
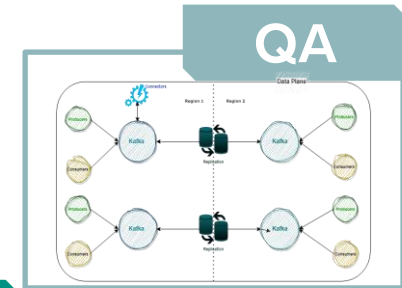
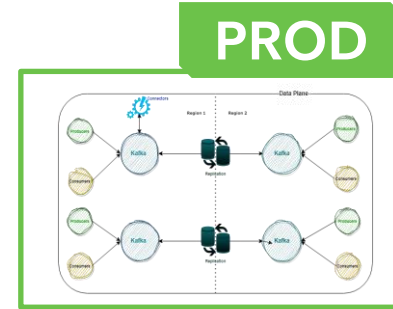
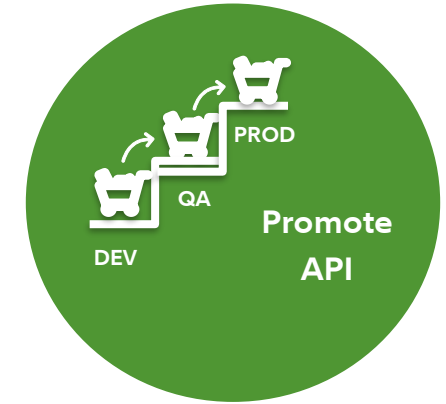


Consistent Configuration across Env



```

"topic_name": "Topic2",
"number_of_partitions": 10,
"deployment_model": "cross_csp",
"max_read_throughput": 10000,
"max_write_throughput_bytes": 10000,
"max_parallel_client_connections": 50,
"scaling_
> "configurations": [
    {
      "retention.ms": 864000
    },
    {
      "min.insync.replica": 2
    }
  ],
> "producers": [
  {
    "dev_user_principal": "dev_user",
    "prod_user_principal": "prod_user"
  }
]
> "consumers": [
  {
    "dev_user_principal": "dev_consumer_1",
    "prod_user_principal": "prod_consumer_1",
    "group_id": "group1"
  },
  {
    "dev_user_principal": "dev_consumer_2",
    "prod_user_principal": "prod_consumer_2",
    "group_id": "group2"
  }
]
    
```



Demo

AWS_USE1\$

6. AWS_USE1

AZ_EUS2\$

8. AZ_EUS2

AWS_USE2\$

AZ_CTUS\$

```
curl -k --cacert {{ca_cert_file}} --key {{key_file}} --cert {{crt_file}} -  
-silent -H 'Content-Type: application/json' \  
-X POST  
https://{{Destination_cluster_bootstrap_endpoint}}/kafka/v3/clusters/{{Dest  
ination_cluster_ID}}/links?link_name=link-test \ --data-raw '{  
"source_cluster_id": XXXXXXX,  
  "configs": [{  
    "name": "bootstrap.servers",  
    "value": "{{ source_cluster_bootstrap_endpoint  
}}"  
  },{  
    "name": "link.mode",  
    "value": "DESTINATION"  
  },{  
    "name": "acl.sync.enable",  
    "value": "true/false"  
  },{  
    "name": "auto.create.mirror.topics.enable",  
    "value": "true/false"  
  }, {  
    "name": "cluster.link.prefix",  
    "value": "prefix"  
  },{  
    "name": "security.protocol",  
    "value": "SSL"  
  },{  
    "name": "ssl.key.password",  
    "value": "xxxxx"  
  },{  
    "name": "ssl.keystore.location",  
    "value": "xxxxx"  
  },{  
    "name": "ssl.keystore.password",  
    "value": "xxxxx"  
  },{  
    "name": "ssl.truststore.location",  
    "value": "xxx"  
  },{  
    "name": "ssl.truststore.password",  
    "value": "xxxxx"  
  }]  
'
```

Cluster Linking Metrics

Number of Cluster Links

2

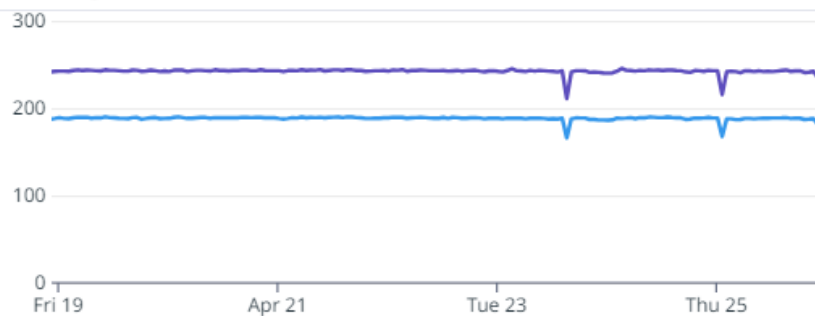
Mirror Partition Count

16

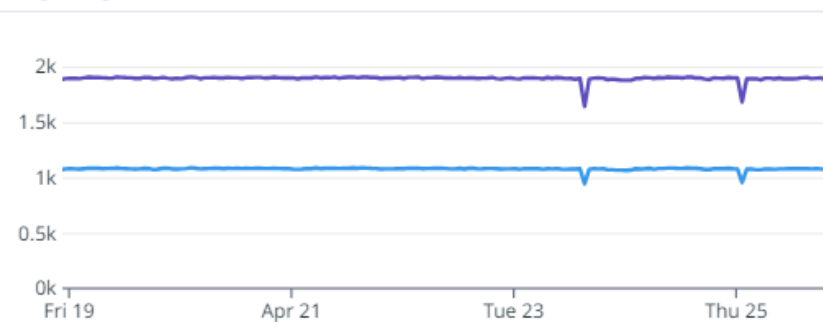
Under replicated mirror Partitons

0

Incoming Rate



Outgoing Rate



Total lag





 [2023: Managing consistent configuration across environments](#)

Thank You!


 Kafka Summit Bangalore 2024



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Nagashree B

 /in/bnagashree



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